

1 CIRCULAR SAWING MACHINE HAVING A LINK MECHANISM

2 BACKGROUND OF THE INVENTION

3 1. Field of the Invention

4 The present invention relates to a circular sawing machine, and more
5 particularly to a circular sawing machine having a link mechanism.

6 2. Description of the Related Art

7 A conventional circular sawing machine in accordance with the prior
8 art shown in Fig. 1 comprises a base 10 formed with a cutting slot 12 and
9 having a side provided with a support seat 15, a movable shaft 16 slidably
10 mounted on the support seat 15 of the base 10, a motor seat 14 secured on the
11 movable shaft 16 to move therewith, and a saw seat 11 secured on the movable
12 shaft 16 to move therewith. In addition, the saw seat 11 is provided with a
13 circular saw blade 13 that can be extended into the cutting slot 12 of the base
14 10. Thus, when the movable shaft 16 is pushed or pulled to move forward and
15 backward, the saw seat 11 is moved with the movable shaft 16, so that the
16 circular saw blade 13 can be moved forward and backward in a linear manner
17 so as to cut the workpiece horizontally.

18 However, the movable shaft 16 does not have a shock-absorbing
19 effect, so that when the circular saw blade 13 is moved to cut the workpiece,
20 vibration produced between the motor seat 14 and the movable shaft 16 is
21 directly transmitted to the circular saw blade 13, thereby seriously affecting the

1 cutting operation of the circular saw blade 13. In addition, the movable shaft
2 16 cannot be folded, thereby occupying a larger storage space when not in use.

3 **SUMMARY OF THE INVENTION**

4 The present invention is to mitigate and/or obviate the disadvantage
5 of the conventional circular sawing machine.

6 The primary objective of the present invention is to provide a circular
7 sawing machine having a link mechanism.

8 Another objective of the present invention is to provide a circular
9 sawing machine, wherein the link mechanism can absorb vibration or shock
10 during operation of the circular saw blade so as to provide a shock-absorbing
11 effect the circular saw blade, so that the circular saw blade can be operated
12 smoothly and stably.

13 A further objective of the present invention is to provide a circular
14 sawing machine, wherein the link mechanism can be fully folded, so that the
15 link mechanism will not occupy much space when not in use, thereby
16 facilitating storage and operation of the circular sawing machine.

17 In accordance with the present invention, there is provided a circular
18 sawing machine, comprising:

19 a base;
20 a saw seat movable relative to the base; and
21 a link mechanism pivotally mounted between the base and the saw
22 seat, so that the saw seat is linearly movable relative to the base.

1 Further benefits and advantages of the present invention will become
2 apparent after a careful reading of the detailed description with appropriate
3 reference to the accompanying drawings.

4 **BRIEF DESCRIPTION OF THE DRAWINGS**

5 Fig. 1 is a perspective view of a conventional circular sawing
6 machine in accordance with the prior art;

7 Fig. 2 is a perspective view of a circular sawing machine in
8 accordance with the preferred embodiment of the present invention;

9 Fig. 3 is a top plan view of the circular sawing machine as shown in
10 Fig. 2;

11 Fig. 4 is a perspective view of a link mechanism of the circular
12 sawing machine in accordance with the preferred embodiment of the present
13 invention;

14 Fig. 5 is a side plan view of the circular sawing machine as shown in
15 Fig. 2;

16 Fig. 6 is a plan cross-sectional view of the circular sawing machine
17 taken along line 6-6 as shown in Fig. 3; and

18 Fig. 7 is a schematic operational view of the circular sawing machine
19 as shown in Fig. 6.

20 **DETAILED DESCRIPTION OF THE INVENTION**

21 Referring to the drawings and initially to Figs. 2-5, a circular sawing
22 machine in accordance with the preferred embodiment of the present invention

1 comprises a base 1, a saw seat 3 movable relative to the base 1, and a link
2 mechanism 2 pivotally mounted between the base 1 and the saw seat 3, so that
3 the saw seat 3 is linearly movable relative to the base 1.

4 The base 1 has a side provided with a support seat 5.

5 The saw seat 3 is provided with a circular saw blade 4.

6 The link mechanism 2 includes a positioning seat 20 secured on the
7 support seat 5 of the base 1, two symmetrically opposite first links 23 each
8 having a first end 230 mounted on the positioning seat 20, two symmetrically
9 opposite second links 24 each having a first end 240 pivotally mounted on a
10 second end 232 of a respective one of the two first links 23, and two
11 symmetrically opposite third links 25 each having a first end 250 pivotally
12 mounted on a second end 242 of a respective one of the two second links 24
13 and a second end 252 pivotally mounted on a connecting seat 26 which is
14 mounted on the saw seat 3. Preferably, the positioning seat 20 of the link
15 mechanism 2 is secured on the support seat 5 of the base 1 by a locking pin 21.

16 Thus, the link mechanism 2 mounted between the base 1 and the saw
17 seat 3 has a symmetrical structure, so that the saw seat 3 and the circular saw
18 blade 4 can be moved linearly relative to the base 1 by linear movement of the
19 link mechanism 2 as shown in Fig. 3.

20 As shown in Fig. 5, the two first links 23 are arranged in a
21 substantially V-shaped manner, the two second links 24 are arranged in a
22 substantially V-shaped manner, and the two third links 25 are also arranged in a

1 substantially V-shaped manner. In addition, the connecting seat 26 is
2 substantially V-shaped and has two sides each pivotally connected with the
3 second end 252 of the respective third link 25 by a pivot shaft 28.

4 As shown in Figs. 3 and 6, the second end 252 of each of the two
5 third links 25 is provided with a catch block 30 that can be rested on the
6 connecting seat 26 when each of the two third links 25 is extended outward
7 relative to the respective second link 24 to the outermost position as shown in
8 Fig. 3, so as to limit the outermost stroke of each of the two third links 25.

9 As shown in Fig. 7, the first end 240 of each of the two second links
10 24 is provided with a catch block 32 that can be rested on the respective third
11 link 25 when each of the two third links 25 is retracted inward relative to the
12 respective second link 24 to the innermost position as shown in Fig. 7, so as to
13 limit the innermost stroke of each of the two third links 25.

14 Thus, the link mechanism 2 can be fully extended outward to the
15 outermost position as shown in Fig. 6, and can be fully retracted inward to the
16 innermost position as shown in Fig. 7, so that the saw seat 3 and the circular
17 saw blade 4 can be moved forward and backward in a linear manner by linear
18 movement of the link mechanism 2 so as to cut the workpiece horizontally.

19 Accordingly, the link mechanism 2 can absorb vibration or shock
20 during operation of the circular saw blade 4 so as to provide a shock-absorbing
21 effect the circular saw blade 4, so that the circular saw blade 4 can be operated
22 smoothly and stably. In addition, the link mechanism 2 can be fully folded as

1 shown in Fig. 4, so that the link mechanism 2 will not occupy much space
2 when not in use, thereby facilitating storage and operation of the circular
3 sawing machine.

4 Although the invention has been explained in relation to its preferred
5 embodiment(s) as mentioned above, it is to be understood that many other
6 possible modifications and variations can be made without departing from the
7 scope of the present invention. It is, therefore, contemplated that the appended
8 claim or claims will cover such modifications and variations that fall within the
9 true scope of the invention.